

Bureau offices, to study the instruments and equipment and receive informal instruction, as reported from the following offices:

Des Moines, Iowa, December 18, 1906, the physical geography class from the North High School.

Duluth, Minn., December 15, 1906, members of the physiography section of the Superior, (Wis.) State Normal School.

Kansas City, Mo., November 14, 1906, a class from Loretto Academy.

Little Rock, Ark., December 12, 1906, the science class from the Little Rock, High School.

Mobile, Ala., December 7, 1906, a section of the girls' class in physics from Barton Academy; also December 13, a section of the boys' class in physical geography from Barton Academy; also December 14, the class in physics from McGill Institute.

Raleigh, N. C., December 15, 1906, the physical geography class from Peace Institute.

San Jose, Cal., December 12, 1906, the physics class from the San Jose High School.

RECENT ADDITIONS TO THE WEATHER BUREAU LIBRARY.

H. H. KIMBALL, Librarian.

The following titles have been selected from among the books recently received, as representing those most likely to be useful to Weather Bureau officials in their meteorological work and studies. Most of them can be loaned for a limited time to officials and employees who make application for them.

American Association for the Advancement of Science.

Proceedings. 55th meeting, New Orleans, Dec., 1905-Jan., 1906. Washington, 1906. 589 pp. 8°.

Association Française pour l'Avancement des Sciences.

Compte rendu de la 34^{me} session. Paris. 1906. 1120 pp. 8°.

Bezold, Wilhelm von.

Gesammelte Abhandlungen aus den Gebieten der Meteorologie und des Erdmagnetismus. Braunschweig. 1906. viii, 448 pp. 8°.

Black, F. A.

Terrestrial magnetism and its causes... London. 1905. (12), 226 pp. 8°.

Börnstein, R[ichard].

Der neuerrichtete öffentliche Wetterdienst für Norddeutschland. (S. A. Verh. phys. Ges. Braunschw. 8 Jahrg. No. 20.) Braunschweig. 1906. Pp. [511]-513. 8°.

Die halbtägigen Schwankungen der Temperatur... (S. A. Verh. phys. Ges. Braunschw. 8 Jahrg. No. 20.) Braunschweig. 1906. Pp. [517]-518. 8°.

Bracke, A.

La densité de la neige. Bruxelles. 1906. 31 pp. 8°.

Mon baromètre. 2 ed. Mons. 1906. 20 pp. 8°.

La photographie des nuages. Mons. 1905. 28 pp. 16°.

La représentation des situations atmosphériques. Mons. 1904. 32 pp. 8°.

British East Africa. Agricultural Department.

Meteorological conditions. Leaflet 11. [Mombasa]. 1905. 4 pp. 12°.

Meteorological reports. 1904. n. p. 1905. 40 pp. 8°.

Same. 2d annual report. 1905. n. p. 1906. [24] pp. 8°.

Cafiero, Federico.

Il R. Istituto Nautico "Ruggero di Lauria" in Riposto. Riposto. 1905. 111, [3] pp. 4°.

Canada. Meteorological Service.

Report for... 1904. Ottawa. 1906. (18), 278 pp. 4°.

Crespin, J.

Le climat d'Alger au point de vue hivernal. (Extr. Compt. rend. Congrès Soc. savantes, 1905. Sciences.) Paris. 1905. 7 pp.

Exner, Félix M.

Grundzüge einer Theorie der synoptischen Luftdruck. Wien. 1906. 76 pp. 8°.

Fritzsche, Richard.

Niederschlag, Abfluss und Verdunstung auf den Landflächen der Erde. Inaug.-Diss... Halle-Wittenberg. Halle a S. 1906. [2], 54, [2] pp. 8°.

Hadden, David E.

Progress and problems of solar physics during the last fifty years. (Repr. Proc. Sioux City acad. sc., Alta, Iowa. v. 2.) [1906.] 6 pp. 8°.

Hogarth, David George.

...The penetration of Arabia... New York. [1904.] xiii, 359 pp. 12°.

Jeans, J. H.

The dynamical theory of gases. Cambridge. 1904. [4], 352 pp. 4°.

Johnston, Sir Harry.

Liberia. 2 vols. London. 1906. (28), 519; (16), 1183 pp. 8°.

Köppen, W.

Klimakunde. I. Allgemeine Klimalehre. Leipzig. 1906. 132, [2] pp. 24°.

Lenard, P.

Ueber Kathodenstrahlen... Leipzig. 1906. 44 pp. 8°.

Millot, C.

Brouillards de mars et gelées de mai. La lune rousse. (Extr. Bull. Soc. sc. Nancy.) Nancy. 1905. 10pp. 8°.

L'été de la Saint-Martin. (Extr. Bull. Soc. sc. Nancy.) Nancy. 1906. 8 pp. 8°.

Mitchell, J. Cairns.

Results of meteorological observations taken in Chester during 1904. (Repr. Proc. Chester soc. nat. sc., Chester. 1904-5.) n. p. [190?] 4, [4] pp. 8°.

Moedebeck, H. W. L.

Die Luftschiffahrt, ihre Vergangenheit und ihre Zukunft; insbesondere das Luftschiff im Verkehr und im Kriege. Strassburg. 1906. (6), 137 pp. 8°.

Neesen, Friedrich.

Die Sicherungen von Schwach- und Starkstromanlagen gegen die Gefahren der atmosphärischen Elektricität. Braunschweig. 1899. 120 pp. 8°.

Paris. Observatoire Municipal de Montsouris.

Annales. Tome 6. Paris. 1905. 495 pp. 8°.

Richard, L.

Géographie de l'Empire de Chine... Chang-hai. 1905. [18], 564, (22) pp. 12°.

Rodriguez de Prada, Angel.

Meteorologia dinamica. 2 ed. Madrid. 1902. vii, 158 pp. 4°.

Schoentjes, H.

Fleurs de la glace. Gand. 1905. 43 pp. 39 pl. 8°.

Sommer, Emil.

Die nicht auf den Meeresspiegel reduzierten Jahres-, Januar-, April-, Juli- und Oktober-Isothermen Deutschlands. Inaug.-Diss... Freiburg i. B. Mannheim. 1906. 83 pp. 8°.

Stützer, Arnold.

Vergleichende Temperaturmessungen zu Marburg a. d. L. und seine barometrische Meereshöhe. Inaug.-Diss... Marburg. 1906. 67 pp. 8°.

The voyage of the *Scotia*. Being the record of a voyage of exploration in Antarctic seas. By three of the staff. Edinburgh. 1906. (24), 375 pp. 8°.

Weise, W.

Die Kreisläufe der Luft nach ihrer Entstehung und in einigen ihrer Wirkungen. Berlin. 1896. 4, [2], 86 pp. 8°.

Zuntz, N. and others.

Hühnkklima und Bergwanderungen in ihrer Wirkung auf den Menschen. Berlin. 1906. xvi, 494 pp. 4°.

RECENT PAPERS BEARING ON METEOROLOGY.

H. H. KIMBALL, Librarian.

The subjoined titles have been selected from the contents of the periodicals and serials recently received in the Library of the Weather Bureau. The titles selected are of papers or other communications bearing on meteorology or cognate branches of science. This is not a complete index of the meteorological contents of all the journals from which it has been compiled; it shows only the articles that appear to the compiler likely to be of particular interest in connection with the work of the Weather Bureau. Unsigned articles are indicated by a —

Astrophysical Journal. Chicago. Vol. 24. Dec., 1906.

Very, Frank W. The temperature of the moon. Pp. 351-354.

Geographical Journal. London. Vol. 29. Jan., 1907.

— The Alps as a weather-parting. P. 84.

— Hoar-frost at high altitudes. [Note.] P. 95.

Journal of the Meteorological Society of Japan. Tokio. 25th year. Nov., 1906.

Sasaki, T. Result of examinations of the pulse-rate on Mount Fuji.

Nature. London. Vol. 75.

G., F. Scientific work on Mont Blanc. (Dec. 27, 1906.) Pp. 203-204.

Collins, F. G. Emerald green sky color. (Jan. 3, 1907.) P. 224.

Hann, Julius. Indian climatology. (Jan. 10, 1907.) Pp. 241-244.

London, Edinburgh, and Dublin Philosophical Magazine. London. 6 ser. Vol. 13. Jan., 1906.

Chree, C. Auroral and sun-spot frequencies. Pp. 149-164.

Popular Science Monthly. New York. Vol. 70. Jan., 1907.

Meier, Konrad. The sanitation of air. Pp. 19-32.

- Proceedings of the American Academy of Arts and Sciences. Boston. Vol. 42. Dec., 1906.*
- Rotch, A. Lawrence.** Results of the Franco-American expedition to explore the atmosphere in the tropics. Pp. 263-272.
- Science. New York. New Series. Vol. 24.*
- Ward, R[obert] DeCourcey.** Thunderstorms and the moon. [Note on article by C. W. Hissink.] (Dec. 28, 1906.) P. 866.
- Science. New York. New Series. Vol. 25.*
- Ward, R[obert] DeCourcey.** Climate and climatic changes in Kashmir. [Note.] (Jan. 18, 1907.) P. 114.
- Scientific American. New York. Vol. 95.*
- Albrecht, Herrmann.** The German research boat *Planet*. (Dec. 22, 1906.) P. 464.
- Scientific American. New York. Vol. 96.*
- Climate: past and present. (Jan. 19, 1907.) P. 67.
- Rotch, A. Lawrence.** The exploration of the atmosphere at sea. Pp. 70-71.
- Bulletin de la Société Belge d'Astronomie. Bruxelles. 11 année. Nov., 1906.*
- Arabeyre, —.** Méthode de prévision du temps d'après un type isobarique spécial. Pp. 426-433.
- Ciel et Terre. Bruxelles. 27 année. 1 jan., 1907.*
- Le contre-azé de sud-est à sud-ouest. [Note.] P. 555.
- Les variations barométriques de longue durée sur des étendues considérables. [Note.] P. 558.
- La Nature. Paris. 35 année. 15 déc., 1906.*
- Bourgeois, Henry.** Les tempêtes des grands lacs Américains. Pp. 36-38.
- Revue Néphologique. Mons. Déc., 1906.*
- Bracke, A.** A propos des héliographies. Pp. 89-90.
- Bracke, A.** Une cause de fortes pluies locales. Pp. 90-92.
- Annalen der Hydrographie und Maritimen Meteorologie. Berlin. 34 Jahrgang.*
- Die Erforschung der höheren Schichten der Atmosphäre an Bord S. M. S. *Planet*. Die Forschungsreise S. M. S. *Planet*. XXII. (Heft 11, 1906.) Pp. 505-510.
- Prager, M.** Ueber die Beziehungen des Monsunregens in Indien zu Wetterlagen entfernter Gegenden und vorangegangener Zeiten. (Heft 12, 1906.) Pp. 562-565.
- Gaea. Leipzig. 43 Jahrgang. Jan., 1907.*
- Cirruswolken und Regen. P. 57.
- Der Taifun vom 18 September 1906. Pp. 57-58.
- Die Druck und Temperaturverhältnisse in den hohen Schichten der Atmosphäre. Pp. 58-59.
- Geographische Zeitschrift. Leipzig. 12 Jahrgang. 11 Heft. 1906.*
- Keller, H.** Die Abflussercheinungen in Mittel-Europa. Pp. 611-630.
- Meteorologische Zeitschrift. Braunschweig. Band 23. Dec., 1906.**
- Quervain, A[lfred] de.** Neue Beweise für die Realität der oberen Inversion in 8 bis 13 km Höhe. Pp. 529-540.
- Birkeland, B. J.** Mitteilungen aus dem norwegischen meteorologischen Institut. Die tägliche Periode des Luftdruckes und der Temperatur in Norwegen. Pp. 540-546.
- Marloth.** Ueber die Wassermengen, welche Sträucher und Bäume aus treibendem Nebel und Wolken auffangen. Pp. 547-553.
- Maurer, Jul.** Dr. August Weilenmann. Pp. 553-554.
- H[ann], J[ulius].** Dines über die vertikalen Temperaturgradienten an der Westküste von Schottland und Oxshott (Surrey). Pp. 554-555.
- H[ann], J[ulius].** Okada über die Wärmeleitung des Schnees. Pp. 555-556.
- Hergesell, H[ugo].** Ueber lokale Windströmungen in der Nähe der Kanarischen Inseln. Pp. 556-559.
- Hann, J[ulius].** Die Windrichtung auf dem Gipfel des Pik von Teneriffa. Pp. 559-561.
- Krebs, Wilhelm.** Das Klima der Karolineninsel Kusale oder Ualan. Pp. 561-562.
- Sapper, Karl.** Meteorologische Beobachtungen, angestellt in den Republiken Guatemala und Salvador 1905. Pp. 562-564.
- Brückner, Ed.** Schwankungen des Niederschlags im Deutschen Reich 1816-1900. Pp. 565-566.
- Bergwitz über den Einfluss des Waldes auf die Elektrizitätszerstreuung in der Luft. P. 567.
- Regenfall zu Port Durban in Natal. Pp. 567-568.
- Regenmessungen in Kamerun. Pp. 568-570.
- Hann, J[ulius].** Meteorologische Beobachtungen in Montevideo und in Uruguay. Pp. 570-571.
- Exner, Felix M.** Bemerkungen über die Zusammensetzung einer geradlinigen Luftströmung mit der Luftbewegung eines Wirbelsturmes. Pp. 571-573.
- Rheden, J.** Wolkenhöhenmessungen mit Scheinwerfern. P. 573.
- Das Feuerschiff in der Bay Chaleur, Neu-Braunschweig. P. 573.
- Ueber die vertikale Temperaturabnahme in der Sonnenatmosphäre. Pp. 573-574.
- H[ann], J[ulius].** Meteorologische Beobachtungen auf Kuba. P. 574.
- Janezic, Eugen.** Besonders intensives Morgenrot. Pp. 574-575.
- Temperatur von Maracaibo, Venezuela. P. 575.
- Hagelfall im Golf von Mexico. Pp. 575-576.
- Physikalische Zeitschrift. Leipzig. 7 Jahrgang. 15. Dez., 1906.*
- Costanzo, G. and Negro, C.** Ueber die Radioaktivität des Regens. Pp. 921-924.

FORECASTS AND WARNINGS.

By Prof. A. J. HENRY, temporarily in charge of Forecast Division.

Over and near the British coasts barometric pressure fluctuated during the first half and continued high during the latter half of the month. In the vicinity of the Azores pressure was high until the 15th, fell from the 16th to the 21st, rose rapidly from the 22d to 27th, and during the last four days of the month was remarkably high. Over the western Atlantic the barometer fell to a minimum of 28.80 inches over Newfoundland on the 4th, fluctuated from the 5th to 12th, was high from the 13th to 21st, began falling on the 22d, and reached 29.80 inches at Bermuda on the 25th. During the 26th and 27th the barometer rose near the American coast and continued high in that region during the balance of the month.

In the United States December was unseasonably warm in the Southwestern States and the middle and southern Rocky Mountain districts, and was colder than usual over the northern portions of the country east of the Rocky Mountains. During the third decade of the month a cold wave visited the eastern half of the country. In Florida the duration and intensity of this cold wave was remarkable. During the period, December 23-27, freezing temperatures occurred over practically the entire peninsula, and on one or more nights the cold was more intense in south-central than in northern districts of the State. This with other Florida cold waves will be made a subject of future discussion.

Precipitation was deficient in the Atlantic and Gulf States, on the north Pacific coast, and in an area extending from the western Lake region to northwestern Texas. Precipitation was in excess of the December average from the lower Lake region to the interior of Texas, generally in the Northwest, and in New Mexico, Arizona, and California.

The first important storm of the month in the United States advanced from the southern California coast to the Canadian Maritime Provinces from the 2d to the 7th, attended during the 5th and 6th by strong gales on the Great Lakes, and on the 6th and 7th by high southerly shifting to northwesterly winds on the middle Atlantic and New England coasts. The passage of this disturbance was followed by a cold wave that covered the Northwestern States on the 6th and extended thence over the Middle Atlantic and New England States during the 7th, with temperatures below zero generally in New England and the interior of New York on the morning of the 8th. During the 6th a storm of marked strength passed inland from the North Pacific, attended by heavy gales in the North Pacific coast States, and by high winds and rain in California. The second cold wave of the month appeared over Manitoba on the morning of the 10th, and sweeping eastward over Canada produced extremely low temperature in northwestern New England on the 12th. On the 10th a storm of exceptional severity appeared on the north Pacific coast and advanced thence over the continent. From the 16th to 19th a cold wave advanced from the Northwest eastward over Canada, with very low temperatures in the interior of New England.

The display of storm warnings on Lakes Superior, Michigan, Huron, and St. Clair was discontinued for the season at the termination of December 18, and on Lakes Erie and Ontario at the termination of December 20. The display of storm warnings on Lake Pepin was discontinued at the termination of December 10, 1906.

BOSTON FORECAST DISTRICT.
The marked features of the weather were the large amount